

## REVIEW OF THE QUEENSLAND POMACANTHINÆ.

BY J. DOUGLAS OGILBY.

THE *Pomacanthine* may be briefly diagnosed as “chatodontoid fishes furnished with a strong spine at the angle of the preopercle.”

The genus *Holacanthus* Lacépède comprises a number of species varying greatly *inter se*. It is not, therefore, surprising that authors have made several attempts to split the genus into sections of more or less doubtful value. Swainson first proposed to separate *H. lamarckii* Lacépède under the name *Genicanthus*, but this was quite unnecessary, that species being absolutely congeneric with Lacépède’s type *H. tricolor*, as that author recognized by placing the two in his “premier sous-genre.” Kaup next proposed the genus *Centropyge*, with *H. tibicen* Cuvier & Valenciennes as its type, under the erroneous impression that the species possessed four anal spines; otherwise being similar to *Holacanthus*, it too becomes a synonym of that genus. Bleeker then, in 1877, made a more valuable contribution to the literature of the genus by dividing it into three—*Chatodontoplus*, *Holacanthus*, and *Acanthochatodon*. The three principal characters relied on in support of his views are—the amount of attachment between the gill-membranes and the isthmus, the form of the body, and the size of the scales. The two first show such wide divergence as to be unreliable, and so become negligible as factors in the subdivision of the genus, but in my opinion the third may well be utilised for that purpose, as indeed had been partly done by Günther many years previously for the sectional separation of the species. *Anglichthys* Jordan & Evermann, having as its type the *Chatodon ciliaris* of Linnaeus, does not seem to require recognition.

The present review deals with seven species, only that number having been as yet recorded from our coast; there are, however, at least five other Indo-Pacific species which should eventually be found in Queensland seas; these are printed in italics in the accompanying list.

HOLACANTHUS FLAVISSIMUS Cuvier & Valenciennes.

.. BICOLOR Bloch.

.. SEXSTRIATUS Kuhl & van Hasselt.

.. IMPERATOR Bloch.

.. SEMICIRCULATUS Cuvier & Valenciennes.

.. *bispinosus* Günther. Amboina to Tahiti.

- Holacanthus tibicen* Cuvier & Valenciennes. Celebes to Lord Howe Island.<sup>1</sup>  
 „ *navarchus* Cuvier & Valenciennes. Moluccas to New Guinea  
 (Macleay).  
 „ *diacanthus* Boddaert. India to Tahiti.  
 „ *nicobariensis* Schneider. India to Tahiti.  
 CHÆTODONTOPLUS DUBOULEYI Günther.  
 „ CONSPICILLATUS Waite.

*Key to the Genera.*

- a*<sup>1</sup>. Exposed portion of scale smoothly and horizontally striated, without or with a spinulose border, the basal margin lobulate; gill-membranes narrowly attached to isthmus . . . . . HOLACANTHUS;  
*a*<sup>2</sup>. Exposed portion of scale everywhere densely spinulose; the basal margin without lobules; gill-membranes more broadly attached to isthmus . . . . . CHÆTODONTOPLUS.

HOLACANTHUS Lacépède.

*Holacanthus* Lacépède, Hist. Nat. Poiss., iv, 1802, p. 525 (*tricolor*); Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 42; Bleeker, Atlas Ichth., ix, 1877, p. 58; Jordan & Evermann, Fish. North and Mid. Amer., pt. 2, 1898, p. 1682.

*Genicanthus* Swainson, Classif. Fish., ii, 1839, p. 212 (*lamarchii*).

*Centropyge* Kaup, Arch. f. Nat., xxvi, 1860, p. 138 (*tibicen*).

*Acanthochaetodon* Bleeker, Arch. Néerl. Sci. Nat., xi, pt. 2, 1876, p. 308 (*lepidolepis*); id., Atlas Ichth., ix, 1877, p. 67.

*Angelichthys* Jordan & Evermann, Check-list North Amer. Fish., 1896, p. 420 (*ciliaris*); id., Fish. North and Mid. Amer., pt. 2, 1898, p. 1684.

Body ovate or elevated, strongly compressed. Scales moderate or small, adherent, ciliated, the exposed portion covered with smooth horizontal striae, which may be coarse and regular (as in *bicolor*) or fine and irregular (as in *sexfasciatus*), with or without a narrow spinulose border, and with the basal margin more or less conspicuously lobulate. Lateral line complete or incomplete, the tube simple or branched. Head short and deep, with declivous profile, pointed snout, and wide preorbital, wholly scaly. Mouth terminal and protractile, with narrow transverse cleft, the jaws equal or the lower the longer; dilated portion of maxillary more or less fully exposed, scaly. Nostrils superolateral, approximate, the posterior open and circular, the anterior valvular and much nearer to the eye than to the tip of the snout. Eyes small, median or anteromedian, high, the interorbital region moderately wide and usually elevated. Preorbital denticulated or smooth at least in the adult; preopercle usually serrated. One dorsal fin with xii to xvi 15 to 23 rays; proeumbent spine present or absent; spines strong, pungent, usually graduated; soft portion of fin more

<sup>1</sup> In the Records of the Australian Museum, vol. iii, p. 203, Waite announces the occurrence of this species at Lord Howe Island, and claims it as "an addition to the Australian fauna." This is, however, incorrect, he having somehow overlooked my record of ten years previously published in the Proceedings of the Linnean Society of New South Wales, vol. xiv, p. 1028. The same remarks apply to *Brama raii* and *Cristiceps australis* and in a lesser degree to *Chironemus marmoratus* and *Trachinotus bolia (russellii)*, while *Pegasus draconis*, also there recorded, is omitted wholly from his list.

or less distinctly angulated. Caudal usually rounded, more rarely emarginate, with the outer rays produced. Anal similar to the soft dorsal, with iii 15 to 22 rays. Pectoral obtusely pointed, with 15 to 20 rays. Ventrals inserted below or slightly behind the pectoral base, close together, with a moderate or strong spine and 5 rays, the outer of which is usually produced, without accessory scale. Gill-openings wide; gill-membranes separate, narrowly attached to the isthmus; branchiostegals six; pseudobranchia well developed; gill-rakers minute; air-bladder large, posteriorly bifurcate. Pyloric caeca numerous.

*Etymology*:—Greek, ὄλος, whole or perfect; ἄκανθα, a spine.

Coastal fishes of small or moderate size from the Indian, Pacific, and Western Atlantic Oceans. About 40 species known.

*Key to the Queensland Species.*

*a*<sup>1</sup>. Scales moderate, in less than 55 transverse series (*Holacanthus*).

*b*<sup>1</sup>. Habit holocentriform; lepidosis without squamulæ.

*c*<sup>1</sup>. Eye longer than the snout; lateral line incomplete; dorsal with 14 spines, the soft portion obtusely pointed . . . . . *flavissimus*.

*b*<sup>2</sup>. Habit chaetodontiform; lepidosis with scattered squamulæ.

*d*<sup>1</sup>. Eye about as long as snout; lateral line incomplete; dorsal with 15 spines, the soft portion acutely pointed; pectoral with 16 or 17 rays . . . . . *bicolor*.

*d*<sup>2</sup>. Eye much shorter than snout; lateral line complete; dorsal with 13 spines, the soft portion obtusely pointed; pectoral with 19 spines . . . . . *sexstriatus*.

*a*<sup>2</sup>. Scales small, in more than 70 transverse series (*Acanthochaetodon*).

*e*<sup>1</sup>. Dorsal fin with 14 spines; lateral line complete.

*f*<sup>1</sup>. Eye much shorter than snout; soft dorsal acutely pointed . . . . . *imperator*.

*f*<sup>2</sup>. Eye rather longer than snout; soft dorsal rounded or obtusely pointed . . . . . *semicirculatus*.

**HOLACANTHUS FLAVISSIMUS** Cuvier & Valenciennes.

*Holacanthus flavissimus* Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 197; Jordan & Seale, Bull. U.S. Bur. Fisher., xxv, 1905, p. 348.

*Holacanthus luteolus* (Parkinson) Cuvier & Valenciennes, *ibid.*, p. 198.

*Holacanthus cyanotis* Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 517; *id.*, Fisch. d. Südsee, pt. 2, 1874, p. 52, pl. xl, fig. A.; Ogilby, Mem. Queensl. Mus., i, 1912, p. 54.

*Holacanthus monophthalmus* Kner, Sitz. Akad. Wien, lvi, 1867, p. 714, fig. 2 (*juv.*); *id.*, *ibid.*, lvii, 1868, p. 16.

*Holacanthus ocularis* Peters, Mon. Akad. Berlin, 1868, p. 147.

*Holacanthus sphyinx* de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 29 Nov. 1884, p. 457.

*Type localities*:—Ullie Island, Caroline Group (*flavissimus*); Tahiti, Society Group (*luteolus*); Aneiteum, New Hebrides Group (*cyanotis*); Raiatea, Society Group (*monophthalmus*); South Sea (*ocularis*); Coast of Queensland (*sphyinx*).

Depth of body 1.8 in its length; dorsal contour slightly more elevated than the ventral, its anterior profile from snout to nape evenly convex and decreasingly acclivous, thence rising slightly by a further convexity to the 7th dorsal spine, beyond which it descends in a long gentle curve to the caudal

peduncle; ventral contour gently rounded from the lip to the ventral, thence linear and feebly declivous to the anal, the base of which is evenly convex; least depth of caudal peduncle 7.1 in the length of the body. Width of head 1.4 in its length, which is 1.15 in its depth and 3.66 in the body-length. Diameter of eye one sixth more than the length of the snout, which is 2.85 in that of the head; interorbital region convex but not elevated, as wide as the snout is long. Jaws equal, maxillary extending to below the anterior border of the eye. Preorbital with 3 or 4 strong teeth, its width 1.9 in the eye-diameter. Hinder limb of preopercle inclined backwards and feebly serrated; a strong retrorse tooth on the lower limb close to the spine, which is short, 2.85 in the length of the head, and extends to below the border of the opercle.

Scales as in *H. bicolor*, but without squamulae, in 46 series above the lateral line, and in 6/1/23 between the spinous dorsal and the vent. Lateral line incomplete, terminating at the base of the 11th dorsal ray.

Dorsal fin originating above the base of the pectoral, with xiv 15 rays, the soft portion 1.75 in the length of the spinous; spines graduated, the first moderately developed, 2.6 in the last, which is 1.2 in the soft fin and 4.55 in the body-length; soft dorsal with obtusely angular outline, the posteromedian rays the longest, extending to beyond the level of the middle of the caudal; procumbent spine protruding. Caudal fin rounded, the middle rays longer than the outer and 3.8 in the length of the body. Anal with iii 17 rays, originating below the 12th dorsal spine; spines much stronger than those of the dorsal, the 1st long, 1.45 in the last, which is 1.15 in the longest ray and rather less than the last dorsal spine; soft anal similar to but shorter, lower, and less pointed than the soft dorsal, so that the hinder border is obliquely linear. Pectoral with 16 rays, its length 3.5 in that of the body; 4th ray longest, extending to below the 7th dorsal spine. Ventral much longer than the pectoral, the spine half as long as the outer ray, which is much produced, 2.6 in the body-length, and reaches to the base of the 1st anal ray.

*Coloration* (1) of our specimen after long immersion and exposure:—Uniform pearl gray, the head and shoulders with a dirty yellow tint.

(2) Of fresh specimen *vide* Jordan and Seale—"Clear deep yellow, citron-yellow below; fins all the same; dorsal, anal, and caudal with very narrow bright blue edge; a deep blue ring around the orange eye; a deep violet-blue on opercle with an orange edge behind; preopercular spines and two bars across the chin slaty blue; two slaty spots on breast; upper lip slaty."

*Etymology*:—Latin: *flavissimus*, superlative of *flavus*, yellow.

*Reg. No.* in Queensland Museum of specimen described:—I. 11/106.

*Measurements* of a Queensland example:—See p. 116.

*Range*:—From the East Coast of Queensland northward to the Caroline Group and eastward to the Paumotu Archipelago.

Cuvier and Valenciennes first gave a place in literature to this species from drawings by Mertens and Parkinson, the former's subject having been taken at Uléa (Ullie Island), one of the Carolines, the latter's at Tahiti in the Society Group, but the descriptions (if such they can be called) taken from these sources, under the names *H. flavissimus* and *H. lutcolus*, are valueless, and might very well have been disregarded. The species does not appear to have been noticed again until 1860, in which year Günther (1), as *H. cyanotis*, gave the first recognizable description from a specimen collected by Macgillivray at Aneiteum, New Hebrides. Within the next decade it received two new names from Kner and Peters respectively, the former describing a young example from Raiatea, Society Group, as *H. monophthalmus*, the latter somewhat vaguely from the "South Seas" as *H. ocularis*, while Kner in the same year reported his fish from Savai, Samoa. Some years later Günther (2) added the Paumotu Archipelago, Hervey and Kingsmill Islands, and the Fiji Group to the known localities, and at a still later date de Vis gave it yet another name, describing it from the Queensland Coast as *H. sphinx*. Finally Jordan and Seale recorded it as being "rather common about the coral reefs of Samoa," but were unable to add any further localities to its distribution.

*Dimensions*:—A small species, not exceeding 100 millim. in total length.

*Remarks*:—Described from one of the Queensland specimens, measuring 81 millim., and in but moderate condition. The other example has been ruined by bad mounting. This pretty little species is easily separable from the other Queensland pomacanthins by its symmetrical head and holocentriform habit.

#### HOLACANTHUS BICOLOR (Bloch).

*Color-sousounan* Renard, Poiss. Moluques, i, 1718, pl. xix, fig. 106.

*Ikan Batoe-roepa-satong* Valentyn, Amboina, iii, 1724, fig. 244.

*Chaetodon bicolor* Bloch, Ansl. Fisch., iii, 1785, pl. 206, fig. 1: East Indies; Bonnaterre, Encycl. Méth., Ichth., p. 93, pl. xcvi, fig. 397; Schneider, Bloch Syst. Ichth., 1801, p. 218.

*Holacanthus bicolor* Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 527, 533, 536; Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 168; Bleeker, Nat. Tijds. Nederl. Ind., v, 1853, p. 77; id., Act. Soc. Sci. Ind. Neerl., viii, 1860, Sumatra, p. 26; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 50; Bleeker, Nederl. Tijds. Dierk., i, 1863, pp. 234, 252; id., Versl. Akad. Amsterdam, xvi, 1864, p. 360; id., Nederl. Tijds. Dierk., ii, 1865, pp. 100, 190, 287; id., Versl. Akad. Amsterdam (2) vii, 1873, p. 39; Günther, Fisch. d. Südsee, pt. 2, 1874, p. 51, pl. xxxix, fig. B; Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chat., p. 127; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 22; id., Atlas Ichth., ix, 1877, p. 61, pl. cccxix, fig. 3; id., Arch. Néerl. Sci. Nat., xiii, 1878, p. 45; Macleay, Proc. Linn. Soc. N. S. Wales, vii, pt. 2, 1882, p. 244; id., ibid., viii, pt. 2, 1883, p. 263; de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 1884, p. 457; Weber, Semon Zool. Forsch., 1895, p. 264; Jordan & Seale, Bull. U. S. Bur. Fisher., xxv, 1905, p. 348; id., ibid., xxvi, 1906, p. 34; Jordan & Richardson, Bull. U. S. Bur. Fisher., xxvii, 1907, p. 269; id., Bur. Sci. Manila, i, 1910, p. 41.

*Type locality*:—East Indies.

Depth of body 1.9 to 2 in its length; dorsal contour rather more elevated than the ventral, its anterior profile linear and strongly acclivous to above the middle of the eye, thence by a moderate convexity to about the 5th dorsal spine, beyond which it descends in a long gentle curve to the middle of the soft dorsal, whence it bends more abruptly downwards to the caudal peduncle; ventral contour feebly convex between the chin and the ventrals, thence linear to the anal, the base of which is evenly convex; least depth of peduncle 6.75 in the length of the body. Width of head 1.6 in its length, which is 1.15 to 1.3 in its depth and 3.7 to 3.85 in the body-length. Diameter of eye 1.15 in the length of the snout, which is 2.7 in that of the head; interorbital region as wide as and one sixth less high than the eye-diameter. Maxillary extending to below the anterior nostril. Preorbital coarsely denticulated, its width 1.2 in the eye-diameter. Hinder limb and posterior half of lower limb of preopercle strongly serrated, the former inclined somewhat backwards; spine long and curved, 1.75 in the length of the head, and extending to beyond the middle of the pectoral base; subopercle serrated.

Scales ctenoid, the exposed portion coarsely and horizontally striated, the striae smooth, each terminating in a stout spinule, the basal portion with the margin conspicuously lobulate; in 50 series above the lateral line and 6/1/18 or 19 between the spinous dorsal and the vent. Scattered squamulae present. Lateral line incomplete, terminating near the base of the last dorsal ray, the tubes simple.

Dorsal fin originating above the opercle, with xv 16 rays, the soft portion 2.6 in the length of the spinous; spines graduated, the 1st well developed, 1.75 in the last, which is 1.8 in the longest ray and 6.1 to 6.33 in the body-length; procumbent spine present; soft dorsal with acutely pointed outline, the 8th and 9th rays longest, extending to beyond the level of the middle of the caudal, its hinder border feebly concave. Caudal fin rounded, the middle rays longer than the outer and 4.1 in the length of the body. Anal fin with iii 18 rays, originating below the 10th dorsal spine, the 1st spine 1.33 in the last, which is 1.8 in the longest ray and 6.25 to 6.5 in the body-length; soft anal similar in height and shape to but much longer than the soft dorsal. Pectoral with 16 or 17 rays, its length 3.9 to 4 in that of the body; 5th ray longest, extending to below the 7th dorsal spine. Ventral much longer than the pectoral, the spine 1.6 in the outer ray, which is well produced, 3.35 in the body-length, and reaches beyond the base of the 1st anal spine.

Gill-rakers 3 + 12, short and pointed, except the anterior pair on the upper branch, which are rudimentary.

Posterior half of trunk and tail deep blue-black, the color continuous on the soft dorsal and anal and on the interspinous membrane of the anal and the







contiguous part of the dorsal; rest of trunk and head, membrane of the anterior dorsal spines, pectorals, ventrals, caudal, and adjoining strip of the peduncle golden yellow; a broad blue-black arcuate band between the eyes, continued across the cheek as an obscure dull blue evanescent band; lips and chin dull blue; dorsal, anal, ventral, and preopercular spines bluish-white.

*Etymology*:—Latin: *bicolor*, of two colors.

*Reg. No.* in Queensland Museum of specimens described:—L. 14/1840-1. \*

*Measurements* of a typical Queensland example:—See p. 116.

*Range*:—Malay Archipelago eastward to Samoa.<sup>2</sup>

Through some confusion with the West Indian *Holacanthus tricolor* Bloch and his immediate followers gave the distribution of this species as “les deux Indes.” a mistake which was not corrected until the publication by Valenciennes of the seventh volume of the “Histoire Naturelle des Poissons.” It was not obtained by Cantor in Malaysia, but Bleeker records it from numerous localities—Sumatra, Flores, Solor, Amboina, Ternate, Ceram, Saparoea, Banda, Arou, and New Guinea. To these Günther added the Solomon and Navigator Groups, from the latter of which Jordan and Seale also received it. Macleay recorded it from Port Moresby, British New Guinea, and subsequently from the D’Entrecasteaux Archipelago, to the eastward of the Territory, but he was unable to include it in the Appendix to his “Descriptive Catalogue of Australian Fishes,” published in 1884. Later, however, in the same year de Vis announced the occurrence of two specimens from the Queensland Coast; in addition to these the Queensland Museum possesses two other local examples labeled “Moreton Bay.” Finally the Endeavour trawled five specimens on fine dark sand in 33 fathoms three and a half miles south-east from Double Island Point.

*How acquired*:—The two specimens originally recorded by de Vis were collected by Mr. Kendall Broadbent on the North Queensland Coast; of those from Moreton Bay no further information is procurable.

*Dimensions*:—A small species, attaining a length of 120 millim.

*Remarks*:—Described from the Moreton Bay specimens above mentioned, which respectively measure 97 and 105 millim.

#### **HOLACANTHUS SEXSTRIATUS** Kuhl & van Hasselt.

*Holacanthus sexstriatus* (Kuhl & van Hasselt) Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 194; Bleeker, Nat., Gen. Arch. Nederl. Ind., i, 1844, p. 520; id., Verh. Batav. Gen., xxiii, 1850, Chæt., p. 25; id., Nat. Tijds. Nederl. Ind., iii, p. 57; id., Act. Soc. Sci.

<sup>2</sup> Günther, relying on Garrett, records the species from the Hawaiian Islands, but the keen-eyed American collectors of those much-exploited isles having failed to rediscover it, the record must be taken as doubtful.

Indo-Neerl., viii, 1860, Celebes, p. 35; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 49; Knerr, Reise Novara, Zool., i, Fische, pt. i, 1865, p. 104; Bleeker, Nederl. Tijds. Dierk., ii, 1865, p. 287; Alleyne and Macleay, Proc. Linn. Soc. N. S. Wales, i, pt. 2, 1877, p. 277; Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 140; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 22; id., Atlas Ichth., ix, 1877, p. 66, pl. cccxxii, fig. 2; Macleay, Proc. Linn. Soc. N. S. Wales, ii, pt. 4, 1878, p. 352; id., ibid., v, pt. 3, 1881, p. 395 (after Günther); id., ibid., vii, pt. 2, 1882, p. 244.

*Chatodon resimus* Gronow, Catal., ed. Gray, 1854, p. 71: "in Oceano Indico."

*Type locality*:—Java.

Depth of body 1.65 to 1.8 in its length: dorsal contour a little less elevated than the ventral, its anterior profile linear and moderately acclivous from the lip to above the anterior third of the eye, thence rising more abruptly by a high convexity to the origin of the spinous dorsal, along the base of which it is feebly convex, while that of the soft forms an even curve to the caudal peduncle: ventral contour feebly concave to the throat, thence evenly rounded to the peduncle, the least depth of which is 7.1 in the length of the body. Width of head 1.3 to 1.4 in its length, which is 1.2 in its depth and 3.9 in the body-length. Diameter of eye 2 to 2.2 in the length of the snout, which is 2.1 in that of the head; interorbital region one third to two thirds wider and one eighth to one fifth higher than the eye-diameter. Maxillary not extending to below the anterior nostril; lower jaw projecting. Preorbital entire, its width one third to three sevenths more than the eye-diameter. Hinder limb of preopercle inclined well backwards and rather weakly serrated, lower limb with several strong teeth decreasing in size from behind; spine long and conspicuously grooved, 2 to 2.25 in the length of the head, and extending beyond the pectoral axil.

Scales feebly ctenoid, the exposed portion with fine often broken horizontal striae and a narrow spinulose inframarginal band, the basal border inconspicuously lobulate, in 48 to 50 series above the lateral line and in 7 or 8/1/22 to 24 between the spinous dorsal and the vent: squamulae present near the lateral line, which is complete and follows the contour of the back: tubes with an ascending and a descending lobule, not extending to the margin of the scale.

Dorsal fin originating above the pectoral axil, with xiii (rarely xiv) 20 rays, the soft portion 1.5 in the spinous; spines graduated, the 1st short, 3.5 in the last, which is 1.85 to 2.1 in the longest ray and one fifth to one sixth of the body-length; soft dorsal with obtusely euneiform outline, the 5th and 6th rays longest, extending to the level of between the middle and end of the caudal fin, its hinder border obliquely truncate. Caudal fin gently rounded, the middle rays a little longer than the outer and 4.25 to 5 in the length of the body. Anal fin with iii 18 or 19 rays, originating below the 8th dorsal spine, the 1st spine 2.2 in the last, which is 1.9 to 2.05 in the 7th ray and 6.15 to 6.7 in the body-length; soft anal as long as but much lower and more obtuse than the soft dorsal, barely reaching to a level with the middle of the caudal. Pectoral with 19 rays, its length 3.75 to 4 in that of the body, the 4th ray longest, extending to below

the 7th dorsal spine. Ventral from two thirds to nine tenths longer than the pectoral, the spine 2.4 in the outer ray, which is much produced, 2 to 2.4 in the body-length, and reaches to between the 2nd anal spine and the 3rd ray.

Gill-rakers 4 + 14, the 3 anterior on the upper limb rudimentary, the rest very short but pointed.

Golden green, with six or seven purple transverse bands as wide as or somewhat narrower than the interspaces, in the smaller example these are continued on the bases of the dorsal and anal fins, or across the abdomen, or around the peduncle, but in the larger example are wholly confined to the sides of the body; each of the scales on the lighter body-bands has also a dull blue central spot. Head and throat purple, uniform or blue-spotted, the former with a wide silvery band extending downwards from the nape to or nearly to the preopercular spine and entering the eye. Spinous dorsal golden green; soft dorsal, caudal, and anal purplish brown, profusely adorned with circular blue spots; pectorals brown, with a narrow suffused grayish border; ventrals uniform purple.

*Etymology*:—Latin: *sex*, six; *striatus*, striped.

*Reg. No.* in Queensland Museum of the specimens described:—I. 13/1455-6.

*Measurements* of a typical Queensland example:—See p. 116.

*Range*:—Seas of the Malay Archipelago eastward to the Gulf of Papua and North-Eastern Queensland.

Described originally from a Javanese example, sent to Paris by Kuhl and van Hassett, Bleeker early extended its range in a northerly direction to Singapore, where, however, it is probably scarce since it was unknown to Cantor, much of whose material was collected there. Subsequently the great Dutch naturalist obtained specimens from Celebes and Amboina, and in 1877 he wrote in the *Atlas Ichthyologique*, "Le sexstriatus n'a pas été trouvé jusqu'ici hors l'Insulinde." Even within these limits it does not appear to be generally distributed, as it has not been recorded from Borneo, nor have the American collectors been more successful in the Philippines; from the Arou Islands too, which have been fairly well exploited by Bleeker, Weber, and myself, it is as yet unrecorded, and it is distinctly strange that so large and striking a species should have entirely escaped the notice of the earlier Malayan historians, such as Ruysch, Renard, and Valentyn, from which we may infer that it is not a common fish among the Spice Islands. The earliest record of its occurrence in Australia was published coincidentally with Bleeker's remark above quoted, by Alleyne and Macleay on the strength of "several large specimens taken near Cape Grenville" by members of the Chevert Expedition; incidentally this is the most southerly station from which it has been as yet recorded; in the following year Macleay received it from Port Darwin, N.T. and two years later from Port Moresby, B.N.G. Our specimens, three in number, come from Darnley Island.

*How acquired*:—Collected by Dr. J. R. Tosh. and presented by him to the Queensland Museum.

*Dimensions*:—According to Bleeker this species attains a length of 500 millim. (On y voit quelquefois des individus d'un demi-mètre de long.)

**HOLACANTHUS IMPERATOR** (Bloch).

- Japanische-Keizer* Ruysch, Coll. Nov. Pisc. Amboina, 1718, p. 37, pl. ix, fig. 1.  
*Douwing-cammus* Renard, Poiss. Moluques, i, 1718, pl. xvi, fig. 93.  
*Empereur du Japon* id., *ibid.*, ii, 1719, pl. lvi, fig. 238; Valentyn, Amboina, iii, 1724, p. 462, fig. 370.  
*Ikan-djamban* Valentyn. *ibid.*, p. 362, fig. 51.  
*Poisson-couronné* id., *ibid.*, p. 479, fig. 418.  
*Chatodon imperator* Bloch, Ausl. Fisch., iii, 1785, p. 51, pl. cxciv; Bonnaterre, Encycl. Méth., Ichth., 1788, p. 92, pl. xciii, fig. 384; Gmelin, Linnæus Syst. Nat., ed. 13, i, 1789, p. 1255; Schneider, Bloch Syst. Ichth., 1801, p. 217.  
*Holacanthus imperator* Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 527, 534, pl. xii, fig. 3; Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 180; Bleeker, Nat. Tijds. Nederl. Ind., iii, 1852, p. 758; id., Act. Soc. Sci. Indo-Neerl., i, Manado and Macassar, p. 48; id., *ibid.*, viii, Celebes, etc., p. 35; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 52; Bleeker, Nederl. Tijds. Dierk., ii, 1865, p. 287; Klunzinger, Verh. zool.-bot. Ges. Wien, xx, 1870, p. 787; Bleeker, Nederl. Tijds. Dierk., iv, 1873, p. 140; Günther, Fisch. d. Südsee, i, pt. 2, 1874, p. 53, pl. xli, fig. A; Bleeker, Pollen & Van Dam, Hist. Madagascar, pt. 4, 1875, p. 96; Day, Fish. India, pt. i, 1875, p. 112, pl. xxviii, fig. 5; Seale, Occ. Pap. Bishop Mus., i, No. 3, 1901, p. 104; Jordan & Seale, Bull. U. S. Bur. Fish., xxv, 1905, p. 349.  
*Acanthochatodon imperator* Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 150; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 21; id., *ibid.*, xiii, 1878, p. 41; id., Verh. Akad. Amsterdam, xviii, 1879, Maurice, p. 14.

*Type locality*:—Moluccas.

Depth of body 1.75 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former undulous and moderately acclivous to the nape, which is convex; beyond this it rises very gently to about the 6th dorsal spine, whence it descends in a long curve to the caudal peduncle; ventral contour irregularly convex between the chin and the vent, thence curving upwards more strongly to the peduncle, the least depth of which is 3.25 in the length of the body. Width of head 1.5 in its length, which is 1.1 in its depth and 3.5 in the body-length. Diameter of eye 2.15 in the length of the snout, which is half that of the head: interorbital region convex, its width 1.5 time the eye-diameter. Maxillary not extending to the vertical from the nostrils. Preorbital entire, its width one third more than the eye-diameter. Hinder limb of preopercle inclined well backwards, evenly serrated, the lower limb with or without one or more strong teeth, the spine short and very strong (sometimes double). 3.9 in the length of the head, and not reaching to below the middle of the opercle.

Scales small and ctenoid, the exposed area more or less completely spinulose; the basal margin not or but little lobulate. Lateral line complete but inconspicuous.

Dorsal fin originating above the pectoral axil, with xiv 21 rays, the soft portion 1.4 in the spinous; 1st spine rather short, about one third of the last, which is 1.55 in the longest ray and 6.2 in the body-length; procumbent spine if present concealed; soft dorsal with acutely pointed outline, the 6th ray longest, the hinder border undulous. Caudal fin rounded, the middle rays longer than the outer, 5.55 in the length of the body. Anal fin with iii 20 rays, originating below the 10th dorsal spine, the first spine 2.45 in the last, which is 1.35 in the middle and longest rays and 7.35 in the body-length; soft portion with evenly rounded outline, a little shorter than the soft dorsal. Pectoral with 19 rays, its length 3.8 in that of the body, the 4th ray longest, extending to below the 6th dorsal spine. Ventral a little longer than the pectoral, the spine 1.55 in the outer ray, which is not produced, is 3.7 in the body-length, and reaches to the vent.

Body purplish brown, with numerous narrow orange bands, which are continued on the soft dorsal and in a less degree on the anal fins, those on the upper half of the body with a general inclination upwards, on the lower half horizontal or with a trivial declination, but always curved well upwards posteriorly; scapular, pectoral and thoracic regions, and branchiostegal membranes uniform blackish. Head greenish yellow; a broad black frontal band, which decreases in width from above, passes downwards through the eye and along the preopercular border to the spine, which is dull blue. Dorsal fin with a broad fulvous marginal band throughout; caudal yellow; anal and pectorals purplish, the latter widely bordered with dull yellow; ventrals greenish yellow.

*Etymology*:—Latin, *imperator*, emperor; so named because the older Dutch writers on the Moluccas called it "*empereur du Japon*."

*Reg. No.* of Queensland Museum specimen described:—I. 14/1711.

*Measurements* of the specimen:—See p. 116.

*Range*:—From the Red Sea and the East Coast of Africa, Madagascar and Mauritius, eastward through the seas of India and the Malay Archipelago to the Society and Paumotu Groups and northward to China and Guam.

Misled by the name given to this fine species by the earlier Dutch historians of the natural history of the Spice Islands, Bloch and those immediately following him gave the habitat as Japan, where, however, it has not as yet been found. This error was not corrected until 1831, when Valenciennes announced its true distribution as the "warm parts of the Indian Seas" from the Moluccas to Mauritius. To this Klunzinger added the Red Sea and Bleeker China and Madagascar, while Günther extended its range in an easterly direction to the far-off Society and Paumotu Groups and Seale in a northerly to the Mariannes. Coming nearer home Bleeker in 1878 recorded it from New Guinea, while our specimen, so far the only Australian representative, comes from Raine Island, an outlier of the Barrier Reef about the latitude of Somerset, N.Q.

*Dimensions*:—Grows to 380 millim.

*Uses*.—No modern writers whom I am able to consult speak of this as a food-fish, but Valenciennes publishes the following encomium on its excellence:—“It is reported to be the most highly esteemed of all the fishes which are commonly eaten in the Indies; they compare its flesh to that of the salmon.”

*Remarks*.—Described from an example measuring 321 millim., collected by Dr. J. R. Toshi, and presented by him to the Queensland Museum.

**HOLACANTHUS SEMICIRCULATUS** Cuvier & Valenciennes.

*Holacanthus semicirculatus* Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 191, pl. clxxxiii; Lesson and Garnot, Voy. Coquille, Zool., ii, 1831, p. 173, pl. xxx, fig. 3; Bleeker, Nat. Tijds. Nederl. Indo., viii, 1855, p. 414; id., ibid., xv, 1858, p. 200; id., ibid., xix, 1859, pp. 331, 333; id., ibid., xx, 1859, p. 241; Günther, Brit. Mus. Catal. Fish. ii, 1860, p. 53; Bleeker, Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra, p. 26; id., ibid., Celebes, p. 35; id., Nederl. Tijds. Dierk., i, 1863, p. 270; id., ibid., ii, 1865, pp. 148, 190, 287; id., Versl. Akad. Amsterdam (2) ii, 1868, p. 297; Macleay, Proc. Linn. Soc. N. S. Wales, viii, 1883, p. 263; Jordan & Seale, Bull. U. S. Bur. Fisher., xxv, 1905, p. 349.

*Chatodon microlepis* Bleeker, Nat. Tijds. Nederl. Ind., iv, 1853, p. 257.

*Holacanthus iburu* Montrouzier, Essai. Faun. Isle Woodlark, 1857, p. 169.

*Holacanthus nicobariensis* part., Day, Fish. India, pt. 1, 1875, p. 112.

*Holacanthus nicobariensis* var. *semicirculatus* id., ibid., pl. xxviii, fig. 6

*Acanthochatodon semicirculatus* Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 146; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 21; id., Atlas Ichth., ix, 1877, p. 69, pl. cccclxx, fig. 5; id., Arch. Néerl. Sci. Nat., xiii, 1878, p. 45.

*Holacanthus semicircularis* de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 457.

*Type locality*.—Timor.

Depth of body 1.7 in its length; dorsal and ventral contours subsymmetrical, the former rather the more elevated, its anterior border linear and strongly acclivous to above the posterior border of the eye, thence convex to about the 5th dorsal spine, beyond which it curves gently downwards to the middle of the soft dorsal, whence the descent to the caudal peduncle is more abrupt; ventral contour evenly convex to the ventrals, thence sublinear and gently declivous to beyond the anal spines, thence curving upwards to the peduncle, the least depth of which is 7.2 in the length of the body. Length of head 1.15 in its depth and 3.2 in the body-length. Diameter of eye rather more than the length of the snout, which is 2.55 in the length of the head; interorbital region convex and moderately elevated, its width 1.2, its height 1.5 in the eye-diameter. Jaws equal; maxillary extending to below the posterior nostril. Preorbital without denticles, its width about half the eye-diameter. Both limbs of preopercle feebly serrated, the hinder inclined slightly backward; spine short and slightly curved, one fourth (to one third) of the length of the head and extending to below the middle (or posterior border) of the opercle.

Scales small; squamulae wanting. Lateral line complete and conspicuous.

Dorsal fin originating above the hinder border of the opercle, with xiii 23 rays, the soft portion 1.3 in the spinous; spines graduated, the first moderately

developed, 2.6 in the last, which is 1.33 in the soft fin and 4.25 in the body-length; soft dorsal with obtusely angular outline, the anteromedian rays the longest, extending to above the middle of the caudal fin; procumbent spine, if present, small and concealed. Caudal fin feebly rounded, the middle rays as long as the outer and 4.8 in the length of the body. Anal with iii 21 rays, originating below the 10th dorsal spine; spines strong and graduated, the first 1.55 in the last, which is 1.15 in the longest and rather more than the last dorsal spine; soft anal similar to, but slightly shorter, lower, and more rounded than the soft dorsal. Pectoral with 19 rays, its length 3.4 in that of the body; 5th ray longest, extending to below the 8th dorsal spine. Ventral much longer than the pectoral, the spine half as long as the outer ray, which is produced, 2.55 in the body-length, and reaches to the 2nd anal spine.

Violaceous blue, with numerous alternate pearly white and pale blue narrow semicircular bands on the trunk and tail, the points of the crescents directed backwards and usually coalescent on the vertical fins; the bands on the head, peduncle, and caudal fin are vertical or nearly so, but a rather broader pearly band runs backward from the snout to the occiput and a slightly convergent pair from behind the eyes. Cheeks, bases of pectorals, and outer half of spinous dorsal yellowish; caudal with a broad terminal blue-gray band.

*Etymology*:—Latin, *semicirculatus*, semicircular.

*Reg. No.* of Queensland Museum specimen:—I. 11/197.

*Measurements* of the specimen described:—See p. 116.

*Range*:—Seas of India and Malaysia eastward to New Ireland and Fiji. Its occurrence at Woodlark Island was mentioned by Montrouzier as long ago as 1857, and some twenty years later Macleay obtained it from the Engineer Group, a short distance east from Moresby Island. Finally in the following year de Vis recorded it from the "Coast of Queensland" as *H. semicircularis*.

*Dimensions*:—A small species, apparently not exceeding 120 millim. in length.

#### CHÆTODONTOPLUS Bleeker.

*Chætodontoplus* Bleeker, Arch. Néerl. Sci. Nat., xi, pt. 2, 1876, p. 307 (*mesoleucus*).

Body ovate or elevated, strongly compressed. Scales minute, adherent, ctenoid, with the entire exposed surface densely spinulose. Lateral line complete or incomplete, rarely interrupted, the tube simple. Head short and deep, with subvertical profile, rather short rounded snout, deep preorbital, wholly scaly. Mouth terminal, with narrow transverse cleft, the jaws equal; maxillary mostly concealed when the mouth is closed, the exposed portion scaly. Teeth in the jaws in several series, small, slender, setiform; roof of mouth and tongue toothless. Nostrils superolateral and approximate, the anterior tubular, nearer to the eye than to the tip of the snout. Eye moderate and anteromedian, high but not encroaching upon the cranial profile. Preopercle with a strong pungent

spine at the angle, the hinder border usually serrated. One dorsal fin, with xi to xiii 18 to 21 rays; spines strong, pungent, graduated; soft portion shorter than the spinous, scaly, with rounded outline. Caudal rounded with 15 branched rays. Anal similar to soft dorsal, with iii 17 to 19 rays, the spines graduated. Pectoral small and obtusely pointed, with 17 to 20 rays. Ventrals inserted below the pectorals, close together, well developed, with i 5 rays, the spine long and strong, the outer ray longest, without accessory scale. Gill-membranes more or less broadly attached to the isthmus.

*Etymology*:—Greek, *χαίτη*, a bristle; *ὄδον*, a tooth; *ὄπλα*, arms or implements of warfare.

*Range*:—Chatodontiform fishes of small or moderate size from the Western Pacific Ocean. About seven species are recognized.

*Key to the Queensland Species.*

- a*<sup>1</sup>. Depth of body 1·4 in its length; D. xi 21, the soft portion two thirds of the length of the spinous .. .. . *dubouleyi*.  
*a*<sup>2</sup>. Depth of body about half its length; D. xiii 19, the soft portion nearly as long as the spinous .. .. . *conspicillatus*.

**CHÆTODONTOPLUS DUBOULEYI** (Günther).<sup>3</sup>

*Holacanthus dubouleyi* Günther, Ann. and Mag. Nat. Hist. (3) xx, 1867, p. 67; Macleay, Proc. Linn. Soc. N. S. Wales, ii, pt. 4, 1878, p. 352; Klunzinger, Sitz. Akad. Wien, lxxx, i, 1879, p. 361; Macleay, *ibid.*, v, pt. 3, 1881, p. 395 (*after Günther*); McCulloch, Rec. Austr. Mus., ix, pt. 3, 1913, p. 360, pl. xiv; *id.*, Rec. West. Austr. Mus., i, pt. 3, 1914, p. 222.

*Chatodontoplus dubouleyi* Bleeker, Arch. Néerl. Sci. Nat., xii, 1877, p. 22.

*Type locality*:—North-West Coast of Australia.<sup>4</sup>

Depth of body 1·4 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former linear and strongly acclivous to above the anterior border of the eye, thence rising abruptly in a high convexity to about the 6th dorsal spine, beyond which it descends in a longer and more gentle curve to the caudal peduncle; ventral contour slightly concave between the lip and the throat, thence evenly rounded to the peduncle, the least depth of which is 7·2 in the length of the body. Width of head 1·55 in its length, which is 1·2 in its depth and 3·85 in the body-length. Diameter of eye 1·15 in the length of

<sup>3</sup> While fully recognising the value of the law which strictly enjoins that there shall be no tampering with an author's original orthography, there are, I think, cases where a certain amount of relaxation from the strict letter of the law is not merely advisable but incumbent upon us. One such case is that of a palpable printer's or pen error, of which the well-known substitution of *Oryzenus* for *Orcynus* is an example; another such is the incorrect spelling of a proper name, whether through ignorance, carelessness, or accident. Two examples of this latter occur at once to me among Australian Fishes, namely *dubouleyi* Günther and *phillippi* Schneider, which should respectively be altered to *dubouleyi* and *phillipi*, so that those whose names are thus honored may be correctly designated.

<sup>4</sup> Mr. du Bouley forwarded collections to the British Museum from both Roebuck Bay and King Sound, and we may, therefore, assume that one or other of these inlets represents the type locality.



the snout, which is 2.6 in that of the head; interorbital region a little wider and two thirds higher than the eye-diameter. Jaws equal, maxillary extending to below the anterior nostril. Preorbital without spines, its width 1.15 in the eye-diameter. Hinder limb of preopercle vertical, serrated or rugose, the spine 2.4 in the length of the head and reaching to below the pectoral axil.

Scales minute and strongly ctenoid, the entire exposed portion coarsely spinulose. Lateral line interrupted, the upper portion terminating close in front of the last dorsal rays, the lower commencing below the middle of the soft dorsal and extending straight to the root of the caudal, its tubes widely separated.

Dorsal fin originating above the vertical limb of the preopercle, with xi 21 rays, the soft portion only about one twelfth shorter than the spinous; spines graduated, the 1st well developed, 2.25 in the last, which is a little less than the 4th and longest ray and nearly one fourth of the body-length; outline of soft fin evenly convex. Caudal fin rounded, the middle rays as long as the outer and 4.35 in the length of the body. Anal with iii 19 rays, originating below the 1st dorsal ray, the 1st spine half as long as the 3rd, which is as long as the anterior rays and 3.7 in the body-length; soft anal similar to but a little longer and higher than the soft dorsal. Pectoral with 18 rays, its length 4.3 in that of the body; 4th ray longest, extending to below the 8th dorsal spine. Ventral a little longer than the pectoral, its spine 1.35 in the outer ray, which is slightly produced, 3.8 in the body-length, and reaches to the anal.

Gill-rakers 3 + 13, all short and triangular.

Purplish brown; a broad yellow band from before and below the three anterior spines across the opercle and base of the pectoral, to between the origin of the ventral and the vent; a second band from the sixth dorsal spine to the peduncle, increasing in width from the front, and about evenly divided between the body and fin, is sometimes continued across the peduncle, the extension being brown-spotted. Sides of head and breast lighter than the body, uniform or dark-spotted, lips and chin yellow. Dorsal and anal fins purple, with numerous pale blue, wavy, often interrupted horizontal lines; caudal, pectoral, and ventral fins yellow.

*Variations*:—McCulloch (*loc. cit.*) writes—"Klunzinger and Macleay have noted considerable variation in the arrangement of the lighter markings on the broad brown body-band. These may form either a network with the lines descending from the back to the belly, or be longitudinal and nearly straight. In others, again, as in that figured, they may be absent and represented only by a few irregular spots near the edges of the otherwise uniform brown surface. The lines on the fins are characteristic, but appear dark violet in some specimens and pale blue in others; the margins of the fins are similarly either light or dark."

*Etymology*:—Named for Mr. F. H. du Bouley, an ardent field naturalist and collector of West Australia, whose recent death we have to deplore.

*Reg. No.* in the Queensland Museum of the specimen described:—  
I. 14/1781.

*Measurements* of a typical Queensland example:—See p. 116.

*Range*:—Coasts of tropical and subtropical Australia. From the Queensland Coast I have seen four specimens obtained in Moreton Bay (2), Port Curtis (1), and Rockingham Bay (1).

*Dimensions*:—Attains a length of 180 millimeters.

*Remarks*:—First described by Günther from specimens forwarded to the British Museum by Mr. F. H. du Bouley from the North-West Coast of Australia, it next appeared at Port Darwin, Northern Territory, where Spalding collected four examples for the Hon. Sir Wm. Macleay. Two years later Klunzinger recorded it from the same locality. McCulloch mentions an example from Cape York, N.Q., in the Australian Museum. Our specimen is from Cardwell, N.Q., where it was collected by Mr. Kendall Broadbent, and measures 150 millim. Finally McCulloch records it from Port Hedland, W.A.

#### CHÆTODONTOPLUS CONSPICILLATUS (Waite).

*Holacanthus conspicillatus* Waite, Rec. Austr. Mus., iii, pt. 7, 15 June, 1900, p. 203, pl. xxxv; id., ibid., v, pt. 1, 1903, p. 37, and pt. 4, 1904, p. 215.

*Holacanthus (Chætodontoptus) personifer* McCulloch, Rec. West. Austr. Mus., i, pt. 3, p. 221, pl. xxxi.

*Type localities*:—Lord Howe Island (*conspicillatus*); West Australia (*personifer*).

Depth of body 1.8 to 2 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former linear and very strongly acclivous to above the posterior border of the eye, thence convex to the 3rd dorsal spine, beyond which it is linear and feebly declivous to the middle of the soft dorsal, whence it curves evenly downward to the caudal peduncle; ventral contour convex to below the eye, thence linear and somewhat declivous to the anal fin, the base of which describes a long gentle upward curve to the peduncle; least depth of peduncle 8.45 to 8.7 in the length of the body. Width of head 1.5 in its length, which is 1.2 in its depth and 4.1 to 4.35 in the body-length. Diameter of eye 1.1 to 1.2 in the length of the snout, which is 2.6 to 3.35 in that of the head; interorbital region as wide as or a little wider than and about as high as the eye-diameter. Lower jaw the longer; maxillary extending to below the anterior nostril. Preorbital without spines, its width 1.25 to 1.55 in the eye-diameter. Hinder limb of preopercle inclined somewhat backwards and evenly serrated, the spine 2 to 2.4 in the length of the head and not quite reaching to below the pectoral axil.

Scales minute and strongly ctenoid, the exposed portion densely spinulose, the basal margin without lobules. Lateral line incomplete, terminating in front of and rather remote from the end of the soft dorsal.